Subject: Troubleshooting Error Codes for SPECS

1. The SPECS program was developed using Visual Basic 3.0 as the programming language and Access 2.0 as the database program. One important component of Access is the Microsoft Jet Database Engine. The Jet engine handles all database processing for both Visual Basic and Access. This includes data definition and integrity, data sharing, security, data storage, access control, and data manipulation.

2. In order for SPECS to operate properly, the following 20 files **must** be located in the SPECS20 directory.

SPECS 2.0 Files
CMDIALOG.VBX
COMMDLG.DLL
CONVTOV2.EXE
CONVTOV2.LDB
CONVTOV2.MDB
GRID.VBX
MSABC110.DDL
MSAES110.DLL
MSAFINX.DLL
MSAJT110.DLL
MSAJT112.DLL
MSAJT200.DLL
SPECS000.LDB
SPECS000.MDB
SPECS20.EXE
SPECS20.HLP
SPIN.VBX
THREED.VBX
VBDB300.DLL
VBRUN300.DLL

MSAJT200 is the primary Jet engine program that evaluates and executes all requests for data. One missing file may result in the failure of SPECS to operate properly.

3. The Visual Basic 3.0 project file is named Specs20.mak and includes 2 code modules, GenCode.bas and Module1.bas. There are also numerous form files. SLOC count is approximately 7500. Specs 2.0 project files are listed below:

Specs20.mak - SPECS 2.0 Project File
Title="SPECS20"
ExeName="SPECS20E.EXE"

MDISPECS.FRM
MODULE1.BAS
GENCODE.BAS
CTRL_OTH.FRM
FORMSAL.FRM
FORMBCI.FRM
CTRL_SAL.FRM
CTRL_BCI.FRM
BROWSEAL.FRM
CMMTCATS.FRM
SALMEMO.FRM
PRINTBCI.FRM
READMSG.FRM
FORMDATE.FRM
DOCS.FRM
PRINTSAL.FRM
LOGO.FRM
STARTMSG.FRM
FORMSWPM.FRM
CHGCAOS.FRM
GETPASSW.FRM
NEWPASSW.FRM
ROITABLE.FRM
ENVFACTS.FRM
EXPORT.FRM
IMPORT.FRM
MODBCI.FRM
SENDMSG.FRM
REMOVDEL.FRM
RESTORE.FRM
ROI.FRM
SELECT.FRM
SWSANDL.FRM
SLOCHELP.FRM
ABOUTBOX.FRM
ADDBCI.FRM
ARCHIVE.FRM
PROCS.FRM
ENV_HELP.FRM
ESTIMCON.FRM
ACTIVITY.FRM
BANNER.FRM
USEROPTS.FRM
GENECDAT.FRM
CECHANGE.FRM

QUERYMGR.FRM
NONDEV.FRM
ESTIMFAC.FRM
IMPSAL.FRM
DATCLEAN.FRM
ESTIMCAO.FRM
BACKGRND.FRM

4. There are 3 types of errors typically associated with VB and the Access database:

   Logic errors

   syntax or compile errors

   Run-time errors

In most cases the interpreter will pick up the syntax errors when the code is running. Logic errors and run-time are not so easily identified and fixed. Careful tracking of all Specs errors will help identify incorrect algorithms, incorrect ordering of statements, reinitialize failures, etc. Run-time and logic errors may be detected using debugging tools. It is impossible to tell how much debugging was performed during Specs development.

5. Access is the default database for VB 3.0. Many of the errors generated while inputting data into Specs 2.0 may be either Access or VB errors. Both the VB help file, VB.hlp, and the Access 2.0 help file, Msacc.hlp, list common errors associated with database operations. The following table lists some of the intrinsic Access Basic and Visual Basic error codes (Note: Not all error codes will apply.):

Code	Message
3	Return without GoSub
5	Illegal function call
6	Overflow
7	Out of memory
9	Subscript out of range
10	Duplicate definition
11	Division by zero
13	Type mismatch
14	Out of string space
16	String formula too complex
17	Can't continue
19	No Resume
20	Resume without error

28	Out of stack space
35	Sub or Function not defined
48	Error in loading DLL
49	Bad DLL calling convention
51	Internal error
52	Bad file name or number
53	File not found
54	Bad file mode
55	File already open
57	Device I/O error
58	File already exists
59	Bad record length
61	Disk full
62	Input past end of file
63	Bad record number
64	Bad file name
67	Too many files
68	Device unavailable
70	Permission denied
71	Disk not ready
74	Can't rename with different drive
75	Path/File access error
76	Path not found
91	Object variable not set
92	FOR loop not initialized
93	Invalid pattern string
94	Invalid use of Null
95	Cannot destroy active form instance
281	No More DDE channels
282	No foreign application responded to a DDE initiate
283	Multiple applications responded to a DDE initiate
284	DDE channel locked
285	Foreign application won't perform DDE method or operation
286	Timeout occured while waiting for DDE response
287	User pressed ESC key during DDE operation
288	Destination is busy
289	Data not provided in DDE operation
290	Data in wrong format
291	Foreign application quit
292	DDE conversation closed or changed
293	DDE method invoked with no channel open
294	Invalid DDE Link format
295	Message queue filled; DDE message lost

298	DDE requires DDEML.DLL
320	Can't use character device names in filenames: 'item'
321	Invalid file format
341	Invalid object array index
342	Not enough room to allocate control array 'item'
343	Object not an array
344	Must specify index for object array
360	Object already loaded
361	Can't load or unload this object
362	Can't unload controls created at design time
363	Custom control 'item' not found
364	Object was unloaded
365	Unable to unload within this context
380	Invalid property value
382	'item' property cannot be set at run time
383	'item' property is read-only
384	'item' property can't be modified when form is minimized or maximized
385	Must specify index when using property array
386	'item' property not available at run time
387	'item' property can't be set on this control
388	Can't set Visible property from a parent menu
391	Name not available.
392	MDI Child forms cannot be hidden
393	'item' property cannot be read at runtime
394	'item' property is write-only
400	Form already displayed; can't show modally
401	Can't show non-modal form when a modal form is displayed
402	Must close or hide topmost modal form first
403	MDI forms cannot be shown modally
404	MDI child forms cannot be shown modally.
420	Invalid object reference
421	Method not applicable for this object
422	Property 'item' not found
424	Object required
425	Invalid object use
426	Only one MDI form allowed
460	Invalid clipboard format
461	Specified format does not match format of data
480	Can't create AutoRedraw image
481	Invalid picture
482	Printer error
708	File not found:	

710	File already open: |
712	Device IO error: |
713	File already exists: |
716	Disk full: |
719	Bad file name: |
722	Too many files: |
725	Permission denied: |
730	Path access error: |
731	Path not found: |
732	Must have startup form or Sub Main()
735	Can't save file to TEMP
740	Invalid procedure name
742	Not enough room to paste contents into current line
743	Unable to set next statement
744	Search text not found
745	Text would be too long. Edit prevented
746	One or more replacements too long and not made
747	Syntax errors produced while replacing
748	An undo error has occurred. Further undo is unavailable
749	Watch expression too long. Expression truncated.
750	An expression must be selected
752	Error reading Tutorial file 'item'
753	Tutorial directory 'item' not found
754	Can't find Tutorial file 'item'
755	Not enough memory to load Tutorial
756	Duplicate procedure name
757	Can't find Windows Help .EXE file
758	Control must be same type as rest of array
759	Array already has a control at index 'item'
760	Not a legal object name: 'item'
761	Must specify which item(s) to print
762	Can't clear INDEX property without changing NAME
764	| is a control name
765	Controls without the align property cannot be placed directly on the MDI form
766	Event handler must be a Sub procedure
768	Event procedure argument has incorrect data type
769	Menu subitem skipped a level
770	Can't put check mark here
771	Can't assign shortcut key to menu name
772	Can't use separator bar as menu name
773	Menu control must have a name
774	Menu control array element must have an index

775	Menu control array indices must be in ascending order
776	Menu control array elements must be contiguous and within the same
777	Shortcut key already assigned
778	Separator may not be checked or disabled, or have an shortcut key
779	At least one submenu item must be visible
780	Valid Range: [1..32]
781	Valid Range:[24..1188]
783	Separator may not be the Window List menu
784	Can't have more than one Window List menu
785	New not allowed on this type
20000	Can't load Custom Control DLL: 'item'
20001	Can't unload Custom Control DLL; in use
20002	Can't quit at this time
20003	You'll have to restart your program after this edit--proceed anyway?
20004	'item' has been changed; must reset
20005	Reset halted programs so Code window can be closed?
20006	Not enough stack space to enter break mode--continue?
20007	Not enough stack space to enter break mode for error--must reset
20008	Line too long to edit--edit truncated line?
20009	Search complete
20011	Invalid command-line argument 'item'
20012	Save changes to 'item'?
20013	You already have a control named 'item'. Do you want to create a control array?
20014	Error loading 'item'. The code associated with this form could not be loaded. Continue loading form?
20015	Error loading 'item'. An error was encountered loading a property. Continue?
20016	Error loading 'item'. A control could not be loaded due to load error. Continue?
20017	Form had old file format
20018	Replace existing 'item'?
20019	'item' does not exist
20020	'item' already exists in project
20021	'|' is a Read-Only file
20022	Errors during load. Refer to '|' for details
20023	'|' could not be loaded
20024	Version number missing or invalid; Visual Basic 2.0 assumed.
20025	String value to long to process; form load aborted
20048	Line |1: The file |2 could not be loaded.

Grid Messages

30000 Can not do a RemoveItem on a fixed row
30001 Can not do an AddItem in a fixed row
30002 Grid does not contain that row
30004 Invalid Column number for alignment
30005 Invalid Alignment value
30006 Unable to Allocate Memory For Grid
30008 Not a valid Picture type
30009 Invalid Row Value
30010 Invalid Column Value
30011 Unable to register the memory manager
30013 Invalid Row Height Value

30014 Invalid Column Width Value
30015 Can not remove last non-fixed row
30016 FixedRows must be one less than Rows value
30017 FixedColumns must be one less than columns value

OLE Messages

31001 Out of memory
31003 Can't open Clipboard
31004 No object
31006 Unable to close object
31007 Can't paste
31008 Invalid property value
31009 Can't copy
31017 Invalid format
31018 Class is not set
31019 Source Document is not set
31021 Invalid Action
31022 Unable to initialize OLE
31023 Invalid or unknown Class
31024 Unable to create link

31026 Source name is too long
31027 Unable to activate object
31028 Object not running
31029 Dialog already in use
31031 Invalid source for link
31032 Unable to create embedded object
31033 Unable to fetch Link source name
31034 Invalid Verb index
31035 Incorrect Clipboard format
31036 Error saving to file
31037 Error loading from file

31038 This control requires VB version 3.0 or greater
31039 Unable to access source document

Both help files provide troubleshooting information for these error codes.

6. The developer used the following code to identify errors that may be generated during Specs 2.0 use:

```
Sub ProgramErrorMessage (ErrorNumber, ErrorText$, ErrorModule$)
' Good error mgt routine from Rick used in most of the error handlers
   Beep
   Msg1$ = "A program error has occurred.  Please contact your local software processes
focal point and provide the following information, along with the last operation you
attempted:" + Chr$(10) + Chr$(10)
   Msg1$ = Msg1$ + "Error number:  " + Str(ErrorNumber) + Chr$(10)
   Msg1$ = Msg1$ + "Error message:  " + ErrorText$ + Chr$(10)
   Msg1$ = Msg1$ + "Error module:  " + ErrorModule$
   MsgBox Msg1$, 48, "SPECS"
   DoEvents

End Sub
```

This routine is used throughout the Specs 2.0 program. The error number and error message may be located in the VB or Access help files. The Error module is located in the applicable Specs20.mak file.

7. The developer also recognized that certain operations are more error prone than others. The most significant operation is the that exports files. The "Export SPECS Database" module has many message boxes that walk the user through the export process. Some of the messages include:

"A selection for CAO is missing"
"A selection for Facility is missing"
"A selection for Contract is missing"
"Must highlight an item to delete it."
"A filename must be supplied...retry."

Typical error codes include:

Error   # 3137
Msg: Missing semicolon (;) at the end of the SQL statement
Module: Export Routine

Error   # 3078
Msg: Couldn't find input table or query BCI
Module: Export Routine

The developer wrote the following error handling routine to address some of the problems associated with exporting files:

IErr = 1
  If Err <> 3000 Then '3000 is the kludge Cognizantbak not found
    ProgramErrorMessage Err, Error$, "Export Routine"
  End If
Resume Next

End Sub

This routine did not fix all the problems and his frustration as stated in his comments is provided below:

' 29 sep 98 jjh - Utterly confounded with this situation where the field CognizantBak keeps ' getting introduced into BCI. Only occurs when CAO field is first and precedes CognizantSSP field. ' This is crazy. A kludge fix is to remove this field if its here and allow in the error routine ' to ignore if its not and all is OK. A better fix would be to delete all fields that ' weren't in BCI to begin with, however this one is the only one to appear and as usual ' a time crunch is at hand.

8. The developer also used the following global parameters to identify the Specs message boxes. He developed a procedure that displays an appropriate error or help message based on the error number passed as part of a link error argument.
.

' Function Parameters
' MsgBox parameters
Global Const MB_OK = 0   ' OK button only
Global Const MB_OKCANCEL = 1   ' OK and Cancel buttons
Global Const MB_ABORTRETRYIGNORE = 2   ' Abort, Retry, and Ignore buttons
Global Const MB_YESNOCANCEL = 3   ' Yes, No, and Cancel buttons
Global Const MB_YESNO = 4   ' Yes and No buttons
Global Const MB_RETRYCANCEL = 5   ' Retry and Cancel buttons

Global Const MB_ICONSTOP = 16   ' Critical message
Global Const MB_ICONQUESTION = 32   ' Warning query
Global Const MB_ICONEXCLAMATION = 48   ' Warning message
Global Const MB_ICONINFORMATION = 64   ' Information message

9. He also developed the following error handling routine to ignore type 3010 errors.
The code and his comments are provided below:

```
-----------------------------------------------------------------------------------------------
GenEstimateErrorHandler:
 If Err = 3010 Then  'this table exists message - is erroneous, so ignore it.
   MsgBox "Temporary database handling problem encountered. - Restarting Calibration
Process."
   Close
   Unload Me
   DoEvents
   frmGenEstCal.Show 1
   Exit Sub
 End If
-----------------------------------------------------------------------------------------------
```

' by jhobbs 4 mar 98 due to VB problems with tabledefs mgt ... adjusted error handlers
' to allow ignore these errors (type 3010)

10. The following .VBX files also are included in the Specs 2.0 program. Many errors
can not be duplicated on other machines. I do not know if there are conflicts associated
with the various versions of system files.

C:\WINNT\SYSTEM\GRID.VBX
C:\WINNT\SYSTEM\MSOLE2.VBX
C:\WINNT\SYSTEM\ANIBUTON.VBX
C:\WINNT\SYSTEM\CMDIALOG.VBX
C:\WINNT\SYSTEM\CRYSTAL.VBX
C:\WINNT\SYSTEM\GAUGE.VBX
C:\WINNT\SYSTEM\KEYSTAT.VBX
C:\WINNT\SYSTEM\MSCOMM.VBX
C:\WINNT\SYSTEM\MSOUTLIN.VBX
C:\WINNT\SYSTEM\PICCLIP.VBX
C:\WINNT\SYSTEM\SPIN.VBX
C:\WINNT\SYSTEM\THREED.VBX